ALKALI-SPECIFIC EFFECTS ON THE SPIN SUSCEPTIBILITY OF FULLERIDES

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We have addressed a long-standing problem in fullerene physics, that of the temperature dependence of the spin susceptibility (c) of conducting alkali metal doped fullerides. We have investigated the spin suceptibility as a function of temperature and pressure on a large variety of metallic/superconducting and non-metallic alkali-doped fullerides. The emerging picture is that due to the Jahn-Teller effect, helped with the dopant atoms, a low-lying triplet state is accessible with temperature, which gives the temperature dependent c both in metallic and non-metallic compounds. We suggest that the potential of light alkali atoms can even profoundly modify the electronic structure of fullerides, suppressing the metal to superconductor phase transition at low temperatures, and provoke a metal to semiconductor transition at high temperatures.

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